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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/596,545  | 06/16/2006  | Teunis Johannes Vink | NL031490            | 7781             |
| 24737 7590 09/30/2008<br>PHILIPS INTELLECTUAL PROPERTY & STANDARDS<br>P.O. BOX 3001<br>BRIARCLIFF MANOR, NY 10510 |             |                      |                     |                  |
| EXAMINER<br>YU, MELANIE J   |             |                      |                     |                  |
| ART UNIT  |             | PAPER NUMBER         |                     |                  |
| 1641  |             |                      |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/596,545

## Applicant(s)

VINK ET AL.

## Examiner

MELANIE YU

## Art Unit

1641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of group I, claims 1-16, in the reply filed on 9 July 2008 is acknowledged.

### ***Specification***

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

2. The disclosure is objected to because of the following informalities: the specification does not contain the headings listed above.

Appropriate correction is required.

***Claim Objections***

3. Claims 1-16 are objected to because of the following informalities: the claims contain reference numbers in parenthesis which is improper because it is unclear whether the reference numbers are claimed or if the exact embodiment in the figures is claimed. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3, 7, 9, 10 and 14-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Lieber et al. (US 2002/0117659).

Lieber et al. teach a device comprising at least one nanowire having a surface and optical properties (par. 64), wherein the surface is provided with at least one binding site that is able to selectively bind a molecule (nanowire is functionalized to bind analyte, par. 64), and a photodetector for detecting the optical properties of the nanowire when the molecule selectively binds to the surface and for outputting a signal

(optical property change of nanowire occurs upon binding, par. 64, detector capable of determining property change and property change may be an optical property, par. 136).

Regarding claim 3, Lieber et al. teach the molecule being a biomolecule (par. 64, 77 and 164).

With respect to claim 7, Lieber et al. teach a nanowire comprising an activator ion (p- and n- type dopants are activator ions placed in the silicon and create ion holes, par. 85).

Regarding claims 9 and 10, Lieber et al. teach a device comprising an array of nanowires, par. 156, 164) and a first nanowire modified with a first binding site and a second nanowire modified with a second binding site, wherein the molecules of the first and second binding molecules are different from each other (par. 164).

With respect to claims 14 and 15, Lieber et al. teach a nanowire grown onto a surface (par. 121) or grown into a porous matrix (par. 92).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 1, 3-6, 8, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolf (US 2003/0087311) in view of Potyrailo et al. (US 6,538,725).

Wolf teaches a device comprising a first fluorescent label having optical properties (conjugate element of FRET is the label, par. 6 and 38; dyes have optical properties, par. 38) and provided with at least one binding site that is able to selectively bind a molecule (FRET conjugate attached to analyte binding ligand and has binding site specific for analyte-analogue, par. 6) and a photodetector for detecting the optical properties of the label when the molecule selectively binds to the surface and for outputting a signal (fluorometer, par. 121). Wolf fails to teach the label being a nanowire.

Potyrailo et al. teach a fluorescent nanowire or a fluorescent dye used as a luminescent label (col. 6, lines 50-60), in order to provide labels that have high long-term stability.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in the device of Wolf, a nanowire label instead of a fluorescent dye label as taught by Potyrailo et al. One having ordinary skill in the art would have been motivated to make such a change as a mere alternative and functionally equivalent labeling technique and since the same expected labeling effect would have been obtained. The use of alternative and functionally equivalent

techniques would have been desirable to those of ordinary skill in the art based on the economics and availability of components.

With respect to claim 3, Wolf teaches the molecule being a biomolecule (par. 43, 44 and 95).

Regarding claims 4-6 and 8, Wolf teaches a biomolecule (analyte-analogue biomolecule, par. 43, 44 and 95) is luminescent by being labeled with a dye (analyte-analogue includes donor fluorophore label, par. 67) having a first luminescent spectrum (donor emits light at a second wavelength, par. 67) and the conjugate FRET label, which may be a nanowire according to Potyrailo et al., (acceptor label attached to analyte binding ligand, par. 67) having a second luminescent spectrum, such that the first and second luminescent spectrums are different (acceptor emits light at a third wavelength which is different from the second wavelength, par. 67).

With respect to claim 12, Wolf teaches the fluorescent dye label suspended in a fluid in the sensor (par. 124) and when combined with Potyrailo et al., the nanowire label would be suspended in the fluid.

Regarding claim 13, while the prior art does not disclose drop depositing the suspension of nanowires on a substrate, such a limitation is merely an intended use which the prior art would inherently be capable of doing. The only distinction between applicant's claims and the prior art is recited in the functional language. It is incumbent upon applicant to show that the application disclosed by the prior art is not actually capable of performing such functions. See *In re Ludtke*, 169 USPQ 563 @ 566 (CCPA 1971) and *In re Swinehart et al.*, 169 USPQ 226 @ 229 (CCPA 1971)

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being obvious over Wolf (US 2003/0087311) in view of Potyrailo et al. (US 6,538,725), as applied to claim 1, further in view of Laing (US 2003/0096275).

Wolf in view of Potyrailo et al. teach a fluorometer detector, but fail to teach the detector being a phototransistor.

Laing teaches a fluorescence spectrophotometer, which is a fluorometer, or a phototransistor detector (par. 123 and 132), in order to provide fluorescence detection. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in the device of Wolf in view of Potyrailo et al., a phototransistor detector as taught by Laing. One having ordinary skill in the art would have been motivated to make such a change as a mere alternative and functionally equivalent detector and since only the same fluorescence signal would have been obtained. The use of alternative and functionally equivalent techniques would have been desirable to those of ordinary skill in the art based on the economics and availability of components.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolf (US 2003/0087311) in view of Potyrailo et al. (US 6,538,725), as applied to claim 1, further in view of Empedocles et al. (US 2004/0005723).

Wolf in view of Potyrailo et al. teach a plurality of different fluorescent labels to detect different analyte (par. 38) and Potyrailo et al. teach a fluorescent label being a nanowire, but the prior art references fail to teach at least two nanowires having different sizes.



Empedocles et al. teach at least two nanowires having different sizes (par. 18 and 127), in order to provide nanowires that produce different signals (par. 121).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Wolf in view of Potyrailo et al., nanowires having different sizes as taught by Empedocles et al., in order to provide nanowires with different fluorescent signals to detect multiple analyte in a sample.

### ***Conclusion***

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELANIE YU whose telephone number is (571)272-2933. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya can be reached on (571) 272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Melanie Yu/  
Patent Examiner, Art Unit 1641